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Constraints in fertilizer consumption in Ganjam district of Odisha

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Abstract

Government of India has proposed doubling of farm income by 2022 which will focus on increasing in production and productivity. This calls a grass root level of growth from village level. As Indian soils have less productivity, this would need higher use of fertilizers consumption in the coming years for blooming production and productivity. Therefore this study was designed for studying various constraints attached with fertilizer consumption in Ganjam district. The study was conducted in Jagnathprasad, Belaguntha, Kabisuryanagar, Ganjam, Chikiti and Digapahandi blocks of Ganjam district, Odisha. The district Ganjam was selected purposively. Random sampling technique was followed to select blocks, panchayats and respondents. The total sample size of the study was 78. The study revealed that major constraints faced by the farmers in fertilizer consumption in Ganjam district were soil status, followed by use of fertilizer constraints, technological constraints, fertilizer availability constraints, Institutional constraints, organizational constraints, financial constraints and socio-cultural constraints. This paper also represents the theme of assessing potential of existing and frontier technologies in enhancing farm income, reducing production cost and risks and improving food quality and nutrition.

Keywords: Constraints, fertilizer consumption

Introduction

Agricultural output can be increased through the expansion of cultivable area or through improving the productivity of available land. One of the crucial input to increase the productivity of land is fertilizer. Fertilizer consumption recorded stable growth in 70s and 80s. The pace of growth has slowed down in the past decade during the post-reform period, against the backdrop of slow growth in consumption of fertilizers, increasing pressure on cultivable land and intensive cultivation practices over the years, the removal of the nutrients from the soil has been far more compared to replenishment through various sources (mainly chemical fertilizers and supplemented by other sources of nutrients such as green manures, organic fertilizers, bio-fertilizers etc.). The role of chemical fertilizers for increased agricultural production in particular in developing country is well established. India is the third largest producer and consumer of chemical fertilizers in the world. The importance of fertilizer is because of shrinking cropping land and production need is high. The Indian National Food Security Act, 2013 aims to provide subsidized food grains to approximately two thirds of India's 1.2 billion people. India needs to produce an additional 5-6 million tonnes of food grains annually to meet the requirement of an increasing population. But Odisha has much less average consumption (89.73 kg/ha) than the national average (140 kg/ha), (source DAC). Fertilizer consumption in Odisha mainly depends on supply of fertilizer, rainfall pattern as most of the area is rainfed. In this case Ganjam has further less consumption (63.84kg/ha) which is much less than required. (Source DAC).

The level of use of fertilizer in India was less than one-half of the Asian average. This distressing trends competes us to find out the answers the following two questions: (i) Despite of high growth rate in fertilizer consumption, why does fertilizer use in India at farm level remain low? (ii) How do changes in real fertilizer prices affect fertilizer demand? Of course, these two questions are directly related to micro and macro aspects of fertilizer demand respectively. Keeping these in consideration this study was conducted in Ganjam district of Odisha entitled "constraints in fertilizer consumption in Ganjam district of Odisha" with the following objective.

1. To determine the constraints of the farmers in use of N, P, K fertilizers and suggestion to overcome.

Materials and Methods

Ganjam district was selected purposively for the study. A sample of 78 respondents from 12 villages of six gram panchayats covering Jagnathprasad, Belaguntha, Kabisurya

nagar, Ganjam, Chikiti and Digapahandi blocks were selected randomly. The details of the respondents selected have been reflected in Table 1. The data was collected personally through a structured interview schedule pre-tested earlier.

Table 1: Selection of Gram Panchayat and the respondents

SI No	Sub-division	Block	G.P	Village	Respondent
1	Bhanjanagar	Jagnathprasad	Jhadabhumi	Tamanada	5
2			Kadua	Kadua	8
3		Belaguntha	Inginathi	Sariapalli	7
4			Badapada	Badapada	8
5	Chattrapur	Kabisuryanagar	Baliasara	K.nuagaon	4
6			Gudiali	Gudiali	11
7		Ganjam	Khandadeuli	Bagalpur	5
8			Sriramchandrapur	Diandein	7
9	Brahampur	Chikiti	Kalabada	Badabarang	4
10			Sonapur	Sonapur	8
11		Digapahandi	Basudevpur	Khajuripalli	5
12			Sidheswar	Kotinada	6

Total Respondents=78

Results and Discussions

Different constraints associated with fertilizer consumption are analysed below

Table 2: Organisational Constraints n=78

Organisational Constraints	Mean score	Rank
Not organising farmers properly	2.68	II
Lack of cooperation & coordination among farmer	2.33	VI
No team building and team spirit among farmer	2.45	IV
Lack of competency in conflict resolution	2.36	V
Poor leadership among people	2.65	III
No motivation from extension functionaries	3.36	I

From Table 2 it was found that lack of motivation from extension functionaries, disorganisation of farmers and poor leadership among farmers were the major organisational constraints having mean scores 3.36, 2.68, 2.65 respectively.

These organisational constraints affected their fertilizer consumption behaviour greatly. It indicated the nominal importance of extension functionaries on farmers and their fertilizer consumption behaviour.

Table 3: Institutional constraints n=78

Institutional Constraints	Mean score	Rank
Weak extension system at village level	3.55	I
No interest and sincerity of extension functionaries	2.60	VI
Extension functionaries not experienced and knowledgeable	1.27	VII
Not understanding the field situation by officials	2.74	V
Inadequate extension activities to motivate	3.14	IV
No timely service and supply	3.32	III
Cooperative societies not functioning properly	3.33	II

It was revealed from the Table 3 that most of the farmers pointed out weak extension system at village level as the main institutional constraint in fertilizer consumption habit, followed by improper functioning of cooperative societies and untimely service and supply contribute largely to the institutional constraints having mean scores 3.33 and 3.32

respectively. Also inadequate extension activities for motivating people and officials not understanding the field situations clearly affect the fertilizer consumption behaviour of farmers in a negative direction whereas respondents opined that extension functionaries had good knowledge and experience.

Table 4: Technological constraints n=78

Technological constraints	Mean score	Rank
Inadequate training	3.68	I
Inadequate guidance and technical expertise	3.23	II
Irregular monitoring and supervision	2.94	III
Inadequate demonstration to learn skills	2.90	IV
No continues flow of information	2.60	V
Not liasoning with fertiliser trader and dealer	2.24	VI

The Table 4 showed various technological constraints that affected the fertilizer consumption behaviour of farmers. Among different technological constraints, inadequate training and inadequate guidance and technical expertise had higher mean scores of 3.68 and 3.23 respectively. Lack of liaisoning with fertilizer manufactures had lowest mean score value suggesting that there was good co-operation of

respondents with fertilizer manufactures, traders and dealers. It means fertilizer consumption behaviour of farmers is negatively affected by the lack of empowerment and required information and technical expertise. Inadequate training and technical expertise led to failure to acquire of proper and updated knowledge by the farmers about fertilizer application and its effective management.

Table 5: Socio-cultural constraints n=78

Socio-Cultural Constraints	Mean score	Rank
Farmers not interested to use fertiliser	1.10	IV
Customs and tradition of society restrict fertilizer use	1.04	V
Non-cooperation of village in fertiliser use	1.04	V
People not interested to purchase fertiliser applied produce	1.33	II
Villagers not allowing in to use community resources for fertilizer use	1.18	III
Enviousness of the villagers in use of fertilizer	1.38	I

Table 5 depicted low mean values of socio-cultural constraints in fertilizer consumption behaviour. This indicates that respondents had faced less socio-cultural constraints. However, constraints like enviousness of the villagers in use of fertilizer and lack of peoples' interest to purchase fertiliser applied produce were the main socio-economic constraints.

and the above table is showing that unavailability of required amount of fertilizer at proper time has made the farmers unable to apply proper fertilizer dose for crop production. Quality of fertilizer and presence of middlemen are also the matters to worry for the local farmers

Table 6: Fertilizer availability constraints n=78

Fertilizer Availability	Mean score	Rank
Not available in time	3.77	I
Required quantity not available	3.67	II
Quality not ensured	3.18	IV
Hoarding of fertilizers by dealer and trader	2.32	VII
Exploitation by middleman	3.09	V
Not supplied with reasonable price	2.36	VI
Single fertilizer not available	1.50	VIII
Not storing before crop season by the Govt.	3.19	III

Table 6 explained various problems in fertilizer availability faced by farmers. The untimely availability of fertilizers greatly affect the fertilizer consumption behaviour of farmers

Table 7: Use of fertilizer constraints n=78

Use Of Fertilizer	Mean score	Rank
No skill in proper method of application	2.87	IV
No competency in using proper dose	2.74	V
No competency in calculation of proper dose	3.05	II
Heavy weed infestation restrict fertilizer use	3.36	I
Incompetency for use in adverse situation	2.92	III

Table 7 revealed that heavy weed infestation demoralise the farmer for using fertilizer. Incompetency in calculation of proper dose and use in adverse condition ranked second and third, followed by farmers have less technical knowledge in proper method of supplication and no competency in using proper dose were the reasons which prevents use of fertilizer.

Table 8: Financial constraints n=78

Financial Support	Mean Score	rank
Adequate credit not available	3.56	I
No incentives by the Govt.	1.89	VII
No insurance coverage to compensate the loss	1.58	VIII
No relaxation in security for availing credit	2.77	V
Not fixing instalments as per the capability	3.27	II
Comparatively higher rate of interest	2.55	VI
No cooperation from credit institution	2.89	IV
Cumbersome procedure in sanctioning of credit	2.96	III
No subsidy facility	1.53	IX

Table 8 revealed farmers' perception on financial constraints where inadequate credit supply and complex credit system ranked the highest which ultimately affect the buying capacity of farmers in fertilizer use. This shows the incompetency of

credit institutions towards helping the local farmers. But minimisation of problems from government and better insurance coverage are on the direction for better agriculture.

Table 9: Constraints on Soil status n=78

Soil Status	Mean Score	Rank
Land productivity deteriorates	3.56	I
Fertility status of the soil deteriorates	3.44	III
Soil becomes hard	2.79	V
Encourages weed population	3.45	IV
Poor crop stand of the next crop	2.29	VI
Water unavailability restrict fertilizer use	3.51	II

From the Table 9 it was found that soil status largely affects the fertilizer consumption behaviour of farmers. The gradually deterioration of land productivity, soil hardness and water unavailability discourage the farmers to follow

recommended fertilizer dose. Also fertilizer use couldn't able to give hopeful crop production which negatively affect the fertilizer consumption behaviour of farmers.

Table 10: Comparative analysis of constraints

SI No	Constraints	Mean of mean score	Rank
1	Organizational constraints	2.64	VI
2	Institutional constraints	2.85	V
3	Technological constraints	2.93	III
4	Socio-cultural constraints	1.18	VIII
5	Fertilizer availability constraints	2.88	IV
6	Use of fertilizer constraints	2.99	II
7	Financial constraints	2.55	VII
8	Soil status	3.17	I

The data in the Table 10 revealed that the respondents had more of constraints in soil status in comparison to other aspects. It is indicated that the respondents were in opinion that soil health deteriorated with the application of fertilisers. It might be the factor for which the respondents were reluctant to use fertilisers. However, the mean score value indicated

that the respondents had faced constraints in almost all the aspects towards fertiliser use.

Attempt was therefore made to screen out the pertinent constraints in fertiliser consumption. Selection made with comparatively higher mean score value have been presented in table below.

Table 11: Pertinent constraints in fertilizer consumption

SI No	Constraints	Mean score	Rank
1	No motivation from extension functionaries	3.36	X
2	Inadequate training	3.68	II
3	Inadequate guidance and technical expertise	3.23	XV
4	Not available in time	3.77	I
5	Required quantity not available	3.67	III
6	Quality not assured	3.18	XVI
6	Exploitation by middleman	3.09	XVIII
7	Weed infestation restrict fertilizer use	3.36	XI
8	Adequate credit not available	3.56	IV
9	Not fixing instalments as per the capacity	3.26	XIV
10	Land productivity deteriorates	3.56	V
11	Fertility status of soil deteriorates	3.44	VIII
12	Encourage weed population	3.43	IX
13	Water unavailability restrict fertilizer use	3.51	VII
15	Weak extension system at village level	3.55	VI
16	Inadequate extension activities to motivate	3.14	XVII
17	No timely service and supply	3.32	XIII
18	Cooperative societies not functioning properly	3.33	XII

The constraints reflected in the Table 11 were the determinant factors restricting the respondents in fertiliser use. It is therefore suggested that the extension officials and concerned head of the district developmental departments promoting fertiliser use have to analyse all these constraints and take possible remedial measures so that the farmers may be motivated to use fertilisers as per the recommendations and increase farm productivity.

Suggestions to overcome the constraints

Necessary actions should be taken to overcome the problem. Government should launch direct benefit of subsidy to the beneficiary which is planned but it is not applied yet. Extension officer should play a vital role in technology transfer. Time of supply and quantity of fertilizer should be taken care. The policies which are made by Government should be feasible to small as well as marginal farmers so that the mission launched "doubling farm income" can be possible.

Conclusion

Based on the result and discussion, it was found that the scenario on consumption of fertiliser was not blooming

visibly. The constraints in consumption of fertilizers are one of the factor for which farmers demotivate from farming. If sufficient action shouldn't be taken before the time then the farm scenario may get worsen. The studies of fertilizers consumption pattern at the districts and agro climatic zone level are very necessary not only for understanding the pattern of fertilizer consumption but are also use full for scientific planning and effective implementation of agricultural developmental programme at the district and State level for the development of country. This data can be linked with the geographical information system to understand the real picture both at state and agro climatic zone level.

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